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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,585	06/15/2005	Xavier Vilanova	932.1308	9053

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EXAMINER	
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ART UNIT	PAPER NUMBER
2863	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/538,585	VILANOVA ET AL.
	Examiner	**Art Unit**	
	Lisa C. Sievers	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>29 May 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>10-22</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>10-22</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>24 October 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ ..

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/05/2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 10, 15, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose-Pehrsson et al. (5469369) in view of Enquist et al. (6484563).

With respect to claim 10, Rose-Pehrsson et al. (5469369) teaches an analyzing system [figure 1] for the detection of reducing and oxidizing gases in a carrier gas (Rose-Pehrsson et al. (5469369), col. 4, lines 63 – 66) which comprises: a plurality of detecting means [14] (Rose-Pehrsson et al. (5469369), figure 1; col. 49, lines 54 – 55), calibrating means (Rose-Pehrsson et al. (5469369), col. 16, lines 59 – 67), a sealed measuring chamber [14], means [24] for connecting said carrier gas to said measuring chamber [14] and means for processing and control of acquisition and data recognition (Rose-Pehrsson et al. (5469369), figures 1 and 2; col. 26, lines 53 – 61), wherein said gas-detection means are sensors based on semiconductor-type metal oxides (Rose-Pehrsson et al. (5469369), col. 8, lines 35 – 39 and 46 – 47), which are

located into said measuring chamber [14], wherein the measurements on said carrier gas are taken inside said chamber without the need to introduce additional oxygen into the sensors' structures, when said sensors are exposed to a carrier gas flow of constant value (Rose-Pehrsson et al. (5469369), col. 5, lines 28 – 50); and wherein said means of processing and control include a system of real-time recognition of said gases (Rose-Pehrsson et al. (5469369), col. 26, lines 53 – 61), which provides a diagram with delimited decision zones, in which the measurements taken on said carrier gas are situated and identified. (Rose-Pehrsson et al. (5469369), figure 8; col. 14, lines 44 – 49)

With respect to claim 15, Rose-Pehrsson et al. (5469369) additionally teaches wherein said processing and control means include a microprocessor [22] that corrects temporary deviations of the sensor responses (Rose-Pehrsson et al. (5469369), col. 29, lines 15 – 22) and controls and processes the data that permit detection of the presence of reducing and/or oxidizing gases at various pre-established levels. (Rose-Pehrsson et al. (5469369), col. 11, lines 27 – 32)

With respect to claim 16, Rose-Pehrsson et al. (5469369) additionally teaches wherein said connecting means comprise a plurality of electrically operated valves (Rose-Pehrsson et al. (5469369), col. 13, lines 15 – 17) and connecting pipes to permit the carrier gas or calibrated gases to flow through the chamber that contains the sensors. (Rose-Pehrsson et al. (5469369), col. 4, lines 49 – 51)

With respect to claim 10, Rose-Pehrsson et al. (5469369) does not teach wherein the carrier gas has an oxygen content not exceeding 30 ppm of oxygen.

With respect to claim 18, Rose-Pehrsson et al. (5469369) does not teach wherein utilization of the gas sensor based on semiconductor-type metal oxides is proposed for detecting reducing and oxidizing gases present in a carrier gas having an oxygen content not exceeding 30 ppm of oxygen.

With respect to claims 10 and 18, Enquist et al. (6484563) teaches a metal-oxide semiconductor type sensor [1] wherein the carrier gas is free of oxygen, wherein utilization of a gas sensor based on semiconductor-type metal oxides is proposed for detecting reducing and oxidizing gases present in a carrier gas having an oxygen content not exceeding 30 ppm of oxygen. (Enquist et al. (6484563), figure 1; col. 2, lines 45 – 54; col. 3, lines 25 – 28)

With respect to claims 10 and 18, it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Rose-Pehrsson et al. (5469369) to have used a

carrier gas not exceeding 30 ppm of oxygen as in Enquist et al. (6484563) because in various cases, the semiconductor will provide a greater signal. (Enquist et al. (6484563), col. 1, lines 48 – 65)

3.   Claims 11, 12, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose-Pehrsson et al. (5469369) and Enquist et al. (6484563), and further in view of Llobet et al.

With respect to claim 11, Rose-Pehrsson et al. (5469369) and Enquist et al. (6484563) teach the invention, as set forth above under the rejection of claim 10.

With respect to claim 11, Rose-Pehrsson et al. (5469369) additionally teaches wherein said calibration means include a plurality of patterns or calibrated gases at least equal in number to the number of reducing and oxidizing gases that have to be detected in the carrier gas (Rose-Pehrsson et al. (5469369), table 2, col. 13, lines 48 – 59), wherein the response of the plurality of sensors to the measurements of patterns includes the obtaining of a vector for each calibrated gas or standard. (Rose-Pehrsson et al. (5469369), figure 1, col. 15, lines 1 – 8)

With respect to claim 12, Rose-Pehrsson et al. (5469369) additionally teaches wherein said recognition means comprises obtaining a learning matrix resulting from grouping the vectors of the measurements taken with the plurality of patterns or calibrated gases. (Rose-Pehrsson et al. (5469369), col. 15, lines1 – 8)

With respect to claim 11, Rose-Pehrsson et al. (5469369) does not teach a vector of conductance variation.

With respect to claim 12, Rose-Pehrsson et al. (5469369) does not teach the use of conductance variation vectors within the learning matrix.

With respect to claims 11 and 12, Llobet et al. teaches a thick-film tin oxide gas sensor for monitoring ethanol, toluene, and o-xylene. Conductance variations (ΔG), "the difference between the sensor conductance when exposed to the reducing vapors and the steady-state has been reached and the sensor conductance in dry air," are taken for each gas or mixture thereof, as are "conductance rise [times] measured from 20 to 60% of ΔG." (Llobet et al., page 971, col. 2, mid page) These values are used in principle component analyses "to evaluate and compare the discriminatory ability of the [sensor] array for the three studied compounds." (Llobet et al., page 972, col. 1, upper page)

With respect to claims 11 and 12, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to have substituted the conductance variation and conductance rise time values (claim 11) of Llobet et al. into the sensor response elements of the pattern vectors within the learning matrix (claim 12) of the system taught and made obvious by Rose-Pehrsson et al. (5469369) in order to implement the pattern recognition algorithm because, when used together, steady-state conductance variations and transient conductance rise times lead to an improved level of classification accuracy over using solely sensor resistances when analyzing results. (Llobet et al., page 972, col. 2, mid page)

With respect to claim 19, Rose-Pehrsson et al. (5469369) teaches a system [figure 1] for detecting reducing and oxidizing gases in a carrier gas (Rose-Pehrsson et al. (5469369), col. 4, lines 63 – 66) which system comprises: a plurality of sensors based upon semiconductor-type metal oxides (Rose-Pehrsson et al. (5469369), figure 1; col. 49, lines 54 – 55; col. 8, lines 35 – 39 and 46 – 47), located in a sealed measuring chamber [14], which sensors work without the need to introduce additional oxygen into the sensors' structure; calibration means comprising a plurality of patterns or calibrated gases at least equal in number to the number of reducing and oxidizing gases that have been detected in the carrier gas (Rose-Pehrsson et al. (5469369), table 2, col. 13, lines 48 – 59); and means for processing and control of acquisition and data recognition, wherein said system implements calibrations in an automated way that is transparent to a user/operator of said system (Rose-Pehrsson et al. (5469369), col. 12, lines 60 – 64; col. 16, lines 59 – 67), wherein said means of processing and control include a system of real-time recognition of said gases (Rose-Pehrsson et al. (5469369), col. 26, lines 53 – 61), which provides a diagram with delimited decision zones, in which the measurements taken on said carrier gas are situated and identified (Rose-Pehrsson et al. (5469369), figure 8; col. 14, line 44 – 49), wherein the response of the plurality of sensors to the measurements of patterns includes obtaining a vector for each calibrated gas or standard, and wherein said recognition system comprises obtaining a learning matrix resulting from grouping the vectors of the measurements taken with the plurality of patterns or calibrated gases. (Rose-Pehrsson et al. (5469369), figure 1; col. 15, lines 1 – 8)

With respect to claim 22, Rose-Pehrsson et al. (5469369) additionally teaches wherein said processing and control means include a microprocessor that corrects temporary deviations of the sensor responses (Rose-Pehrsson et al. (5469369), col. 29, lines 15 – 22) and controls

and processes the data that permit detection of the presence of reducing and/or oxidizing gases at various pre-established levels. (Rose-Pehrsson et al. (5469369), col. 11, lines 27 – 32)

With respect to claim 19, Rose-Pehrsson et al. (5469369) does not teach wherein the carrier gas has an oxygen content not exceeding 30 ppm of oxygen, nor wherein the vectors are vectors of conductance variation.

With respect to claim 19, Enquist et al. (6484563) teaches a metal-oxide semiconductor type sensor [1] wherein the carrier gas is free of oxygen. (Enquist et al. (6484563), figure 1; col. 2, lines 45 – 54; col. 3, lines 25 – 28)

With respect to claim 19, Llobet et al. teaches a thick-film tin oxide gas sensor for monitoring ethanol, toluene, and o-xylene. Conductance variations (ΔG), "the difference between the sensor conductance when exposed to the reducing vapors and the steady-state has been reached and the sensor conductance in dry air," are taken for each gas or mixture thereof, as are "conductance rise [times] measured from 20 to 60% of ΔG." (Llobet et al., page 971, col. 2, mid page) These values are used in principle component analyses "to evaluate and compare the discriminatory ability of the [sensor] array for the three studied compounds." (Llobet et al., page 972, col. 1, upper page)

With respect to claim 19, it would have been obvious to one of ordinary skill in the art, at the time the invention was made for Rose-Pehrsson et al. (5469369) to have used a carrier gas not exceeding 30 ppm of oxygen as in Enquist et al. (6484563) because in various cases, the semiconductor will provide a greater signal. (Enquist et al. (6484563), col. 1, lines 48 – 65)

With respect to claim 19, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to have substituted the conductance variation and conductance rise time values of Llobet et al. into the sensor response elements of the pattern vectors within the learning matrix of the system taught and made obvious by Rose-Pehrsson et al. (5469369) in order to implement the pattern recognition algorithm because, when used together, steady-state conductance variations and transient conductance rise times lead to an improved level of classification accuracy over using solely sensor resistances when analyzing results. (Llobet et al., page 972, col. 2, mid page)

4.   Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose-Pehrsson et al. (5469369), Enquist et al. (6484563) and Llobet et al. as applied to claim 12 above, and further in view of Lewis et al. (5959191).

With respect to claim 13, Rose-Pehrsson et al. (5469369), Enquist et al. (6484563) and Llobet et al. teach the invention, as set forth above under the rejection of claim 12, including wherein said recognition means identifies the measurements taken in the carrier gas, according to the algorithm: obtaining a vector of conductance variation for the plurality of sensors.

With respect to claim 14, Rose-Pehrsson et al. (5469369) additionally teaches wherein the type of response identified by the recognition means includes the responses of pure carrier gas, contaminated carrier gas at alert level due to at least one contaminant and contaminated carrier gas at alarm level due to at least one contaminant. (Rose-Pehrsson et al. (5469369), col. 12, lines 64 – 66)

With respect to claim 13, Rose-Pehrsson et al. (5469369) does not teach auto scaling of the vector with mean values and variances used to auto scale a learning matrix obtained from the patterns or calibrated gases; projecting the auto scaled vector onto a space of the principal components extracted on the basis of the learning matrix obtained with the calibration means; and identifying a type of response, dependent upon the position occupied by the vector.

With respect to claim 13, Lewis et al. (5959191) teaches a system with "sensor arrays for detecting an analyte in a fluid for use in conjunction with an electrical measuring apparatus" (Lewis et al. (5959191); figure 1B; col. 3, lines 38 – 41) "Fluids may be liquid or gaseous in nature" and may include a wide variety of essentially reducing gases. (Lewis et al. (5959191), col. 8, lines 1 and 28 – 38) Data obtained from exposures of the sensor array to analytes are compiled in a matrix with each row representing one exposure and each column representing a measured resistance. The matrix is then autoscaled in the following manner: (Lewis et al. (5959191), col. 9, lines 43 – 56)

further processing (19). In this preprocessing technique, all the data associated with a single descriptor (i.e. a column in the data matrix) were centered around zero with unit standard deviation   50

$$d'_{ij} = (d_{ij} - \bar{d}_i)/\sigma_i \qquad (1)$$

where $\bar{d}_i$ is the mean value for descriptor i and σ_i is the   55
corresponding standard deviation.

After more processing, the data are projected onto the space of the principal components and the system determines the identity of the substances yielding particular sensor responses. (Lewis et al. (5959191); figure 9; col. 9, lines 57 – 67; col. 10, lines 1 – 22)

With respect to claim 13, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to have substituted the steps of autoscaling, principle component analysis, and gas identification from sensor responses of Lewis et al. (5959191) into the data processing of the learning matrix and pattern vectors carried out under the system taught and made obvious by Rose-Pehrsson et al. (5469369), Enquist et al. (6484563), and Llobet et al. because it is "useful to [then] express the results of the principle component analysis in terms of physical parameters" which can be accomplished "via a multi-linear least square fit between the principle component values and the corresponding parameter of interest.... [resulting] in a linear combination of the principle components and [yielding] the best fit to the corresponding parameter value." (Lewis et al. (5959191), col. 10, lines 23 – 31)

5.   Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rose-Pehrsson et al. (5469369) and Enquist et al. (6484563), as applied to claim 10 above, and further in view of Kurokawa et al. (6679097 B2).

With respect to claim 17, Rose-Pehrsson et al. (5469369) and Enquist et al. (6484563) teach the invention, as set forth above under the rejection of claim 10.

With respect to claim 17, Rose-Pehrsson et al. (5469369) does not teach wherein the carrier gas is carbon dioxide.

With respect to claim 17, Kurokawa et al. (6679097 B2) teaches a system and method for "monitoring a concentration of oxygen in a beverage production process" (Kurokawa et al. (6679097 B2), col. 9, lines 34 – 37) wherein carbon dioxide or nitrogen gas, along with gas from the inside of a bottle, are delivered to a measuring apparatus. (Kurokawa et al. (6679097 B2), col. 5, lines 49 – 61).

With respect to claim 17, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to have substituted the carbon dioxide carrier gas of Kurokawa et al. (6679097 B2) for the carrier gas of Rose-Pehrsson et al. (5469369) because, when the system is applied to the beverage industry, carbon dioxide will not affect the flavor of the beverage. (Kurokawa et al. (6679097 B2), col. 2, lines 1 – 3)

6.   Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rose-Pehrsson et al. (5469369), Enquist et al. (6484563) and Llobet et al. as applied to claim 19 above, and further in view of Lewis et al. (5959191).

With respect to claim 20, Rose-Pehrsson et al. (5469369), Enquist et al. (6484563) and Llobet et al. teach the invention, as set forth above under the rejection of claim 19.

With respect to claim 20, Rose-Pehrsson et al. (5469369) additionally teaches wherein said recognition system identifies the measurements taken in the carrier gas, according to the algorithm: obtaining a vector for the plurality of sensors (Rose-Pehrsson et al. (5469369), col. 15, lines 1 – 8).

With respect to claim 21, Rose-Pehrsson et al. (5469369) additionally teaches wherein the type of response identified by the system includes the responses of pure carrier gas, contaminated carrier gas at alert level due to at least one contaminant and contaminated carrier gas at alarm level due to at least one contaminant. (Rose-Pehrsson et al. (5469369), col. 12, lines 64 – 66)

With respect to claim 20, Rose-Pehrsson et al. (5469369) does not teach wherein the vectors are vectors of conductance variation, nor auto scaling of the vector with mean values and variances used to auto scale a learning matrix obtained from the patterns or calibrated gases; projecting the auto scaled vector onto a space of the principal components extracted on the basis of the learning matrix obtained with the calibration means; and identifying a type of response, dependent upon the position occupied by the vector.

With respect to claim 20, Lewis et al. (5959191) teaches a system with "sensor arrays for detecting an analyte in a fluid for use in conjunction with an electrical measuring apparatus" (Lewis et al. (5959191); figure 1B; col. 3, lines 38 – 41) "Fluids may be liquid or gaseous in nature" and may include a wide variety of essentially reducing gases. (Lewis et al. (5959191), col. 8, lines 1 and 28 – 38) Data obtained from exposures of the sensor array to analytes are compiled in a matrix with each row representing one exposure and each column representing a measured resistance. The matrix is then autoscaled in the following manner: (Lewis et al. (5959191), col. 9, lines 43 – 56)

> further processing (19). In this preprocessing technique, all
> the data associated with a single descriptor (i.e. a column in
> the data matrix) were centered around zero with unit stan-   50
> dard deviation
>
> $$d'_{ij} = (d_{ij} - \bar{d}_i)/\sigma_i \qquad (1)$$
>
> where $\bar{d}_i$ is the mean value for descriptor i and σ_i is the 55
> corresponding standard deviation.

After more processing, the data are projected onto the space of the principal components and the system determines the identity of the substances yielding particular sensor responses. (Lewis et al. (5959191); figure 9; col. 9, lines 57 – 67; col. 10, lines 1 – 22)

With respect to claim 20, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to have substituted the steps of autoscaling, principle component analysis, and gas identification from sensor responses of Lewis et al. (5959191) into the data processing of the learning matrix and pattern vectors carried out under the system taught and made obvious by Rose-Pehrsson et al. (5469369), Enquist et al. (6484563), and Llobet et al. because it is "useful to [then] express the results of the principle component analysis in terms of physical parameters" which can be accomplished "via a multi-linear least square fit between the principle component values and the corresponding parameter of interest.... [resulting] in a linear combination of the principle components and [yielding] the best fit to the corresponding parameter value." (Lewis et al. (5959191), col. 10, lines 23 – 31)

Response to Arguments

7.   Applicant's arguments filed on 5/29/2007 have been fully considered. Applicant has cancelled claims 1 - 9. Applicant has added claims 10 - 22.

Applicant states that Rose-Pehrsson et al. (5469369) relies on SAW sensors and does not teach or support a viable system using semiconductor sensors. The Examiner does not agree. Rose-Pehrsson et al. (5469369) describes a gas sensing device with the preferred embodiment incorporating SAW sensors, however, Rose-Pehrsson et al. (5469369) also presents an alternative embodiment incorporating chemiresistors. (Rose-Pehrsson et al. (5469369), col. 8, lines 35 – 50) As described by Wilson et al. (2001), there are two dominant types of chemiresistor: metal-oxide semiconductors and polymers. Given the suggested

alternative embodiment, the system of Rose-Pehrsson et al. (5469369) appears to be compatible with semiconductor sensors.

With respect to claim 10, Applicant states that the claimed invention is capable of performing calculations extremely fast, or on the order of ms. Applicant also states that a sampling system is not required. Applicant's definition of a sampling system is not entirely clear to the Examiner. The limitation of processing on the order of ms and the requirement of a sampling system is not pertinent to claim 10. Rose-Pehrsson et al. (5469369) teaches real-time recognition of gases, specifying a processing time of less than 2 seconds. (Rose-Pehrsson et al. (5469369), col. 26, lines 53 – 61; col. 29, lines 28 – 35)

Applicant states that Rose-Pehrsson et al. (5469369) is intended to detect warfare gases and other toxics wherein a meaningful scenario would have to be the detection of these agents in air. The use/type of agent detected is not pertinent, nor does Rose-Pehrsson et al. (5469369) preclude testing for said warfare and toxic agents or other agents within non-air environments.

Examiner would like to note that Applicant has previously stated that before the claimed invention, no sensors were known, based on semiconductor-type metal oxides, that permitted the detection of reducing and oxidizing gases in the complete absence of oxygen in a carrier gas atmosphere or current. Presently, Applicant provides the general knowledge of semiconductor-type metal oxide sensors, including their working mechanism requiring air oxygen. It is not clear how Applicant's claimed invention has overcome the teachings of the cited prior art such that a semiconductor-type metal oxide sensor would operate effectively without oxygen. Applicant has not provided particular details on the claimed sensor's structure, component composition, chemical mechanisms involved, or suggestive evidence/data regarding claimed functionality in the absence of oxygen.
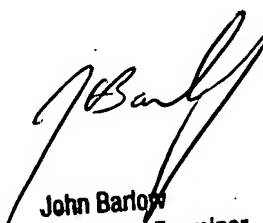
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa C. Sievers whose telephone number is (571) 272-8052. The examiner can normally be reached on M-F, 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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